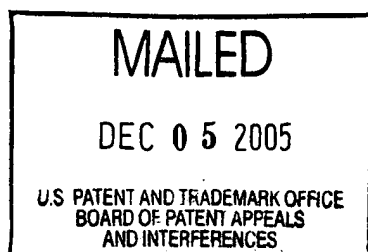


The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

## UNITED STATES PATENT AND TRADEMARK OFFICE

### BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES



Ex parte FRED N. DESAI, HIROSHI NAKAHATA,  
JOHN J. CURRO, and DOUGLAS H. BENSON

Appeal No. 2005-2751  
Application No. 09/909,486

ON BRIEF

Before KIMLIN, HANLON, and KRATZ, Administrative Patent Judges.  
HANLON, Administrative Patent Judge.

### DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the final rejection of claims 1 through 10. Claims 11 through 20 are also pending but have been withdrawn from consideration. The claims on appeal are directed to a nonwoven web. Claims 1 and 7 are illustrative and read as follows:

1. A nonwoven web comprising a plurality of apertures each having a hole size greater than 2 mm<sup>2</sup>, and a hole aspect ratio less than 6, said nonwoven web having an

open area greater than 15% and being capable of at least 70% extension in the cross machine direction at a loading of 10 g/cm.

7. A nonwoven web comprising a plurality of apertures formed by application of a tensioning force, said apertures coincident with a plurality of weakened, melt-stabilized locations, said apertures having a circumferential edge, a portion of said circumferential edge being defined by a remnant of said melt-stabilized locations, said nonwoven web capable of extension in the cross machine direction of at least 70% at a loading of 10 g/cm.

The references relied upon by the examiner are:

Shimalla	4,588,630	May 13, 1986
Benson et al. (Benson)	5,628,097	May 13, 1997
Nakahata	5,873,868	Feb. 23, 1999
Curro et al. (Curro)	6,452,063	Sept. 17, 2002

The following rejections are at issue in this appeal:

- (1) Claims 1, 4 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata and Curro.
- (2) Claims 7-10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata and Shimalla.
- (3) Claims 1-4 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata, Shimalla and Curro.
- (4) Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata, Curro and Benson.

### Discussion

#### A. Rejection of claims 1, 4 and 6

Claims 1, 4 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata and Curro. The examiner sets forth the prima facie case of obviousness as follows (Answer at 3-4):

Regarding Applicant's claim 1, Nakahata discloses a nonwoven web (*col. 5, lines 39-54*) comprising a plurality of apertures (*col. 6, lines 33-34*) each having a hole size greater than 2 mm<sup>2</sup> (*col. 12, lines 18-20*). Figure 4 in Nakahata shows the web having an open area greater than 15%. Nakahata further discloses that the topsheet<sup>[1]</sup> has an elastic extensibility of from about 10% to about 500% in the cross machine direction, which reads on Applicant's limitation being capable of at least 70% extension in the cross machine direction at a loading or [sic, of] 10 g/cm (*claim 8 and col. 10, lines 17-34*).

Nakahata fails to disclose that the apertures have a hole aspect ratio of less than 6. . . .

Curro teaches an apertured topsheet with an aspect ratio between 1.5:1 and 5:1 (*col. 11, lines 10-13*). An aperture with one of these aspect ratios is provided with the benefit of retaining more open area when the web is extended in a direction generally orthogonal to the major axis of the aperture (*col. 11, lines 3-25*).

Nakahata and Curro are analogous because they both disclose [sic, disclose] disposable absorbent article[s] such as diapers, feminine hygiene garments, wipes, etc.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use an aspect ratio of less than 6 in Nakahata as taught by Curro in order to provide the benefit of retaining more open area when the web is extended. One of ordinary skill in the art would have been motivated to use the aspect ratios taught by Curro because of the benefit of retaining more open area when the web is extended (*Curro col. 11, lines 3-25*). It is desirable to have more open area on the web when it is extended so that fluid flow is not impeded.

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<sup>1</sup> The topsheet is manufactured from the nonwoven web. See Nakahata, col. 5, lines 42-48.

The appellants present four arguments with respect to the rejection of claim 1. See Brief at 3-6. First, the appellants argue that the specification in Nakahata is silent as to the percentage of open area in the nonwoven web. Therefore, it was error for the examiner to rely on Figure 4 of Nakahata as showing a web having an open area greater than 15%. The appellants rely on Hockerson-Halberstadt, Inc. v. Avia Group Int'l, 222 F.3d 951, 956, 55 USPQ2d 1487, 1491 (Fed. Cir. 2000) for support. Brief at 3-4.

We disagree. The Court in Hockerson-Halberstadt, 222 F.3d at 956, 55 USPQ2d at 1491, explained that “patent drawings do not define precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue” (emphasis added). Nevertheless, the examiner correctly explains that the limitation in claim 1 of “an open area greater than 15%” is not a precise proportion but rather is a broad range, i.e., from more than 15% to 100% of open area. Answer at 9.

Furthermore, the teachings of Nakahata reasonably suggest that the disclosed nonwoven web has an open area of greater than 15%. See col. 12, lines 17-22 (the application of tensile forces to topsheet 202 results in a plurality of substantially equal area openings having an area of from about 1.0 mm<sup>2</sup> to about 2500 mm<sup>2</sup> that are substantially uniformly distributed over the entirety of cut pattern 204 in Figure 2); see also col. 12, lines 57-59 (slit pattern 204 in Figure 2 can be an overall pattern that extends over the entire surface of topsheet 202). We note that the appellants have failed to show that the claimed range, i.e., an open area of more than 15% to 100%, is critical. See In re

Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990) (where the difference between the claimed invention and the prior art is a range the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range).

Finally, we note that Nakahata and the instant application are both assigned to The Proctor & Gamble Company. Accordingly, the appellants are in the best position to prove that the nonwoven web in Nakahata does not have an open area greater than 15%.<sup>2</sup> See In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984) (after a prima facie case of unpatentability has been established, the burden of going forward shifts to the applicant).

Second, the appellants argue that Nakahata does not teach or suggest a nonwoven web that is capable of at least 70% extension in the cross machine direction at a loading of 10 g/cm. Brief at 4-5.

The examiner points out that Nakahata discloses that the topsheet has an elastic extensibility of from about 10% to about 500% in the cross machine direction when subjected to tension. See claim 8, col. 10, lines 17-53 and col. 13, lines 7-21. Nevertheless, Nakahata does not expressly disclose the load at which this extensibility is exhibited.

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<sup>2</sup> Hiroshi Nakahata is named as the sole inventor in U.S. Patent No. 5,873,868 to Nakahata, and Hiroshi Nakahata is named as a joint inventor in the instant application.

According to the appellants' specification, 10 g/cm is a relatively low loading.

Specification at 13, line 7. The appellants explain that (Specification at 13, lines 7-11):

For disposable absorbent articles, including diapers, it is important that the extension be available for body movements under low tension and also for ease of application. Low force extension contributes to a feeling of comfort, fit, and softness. For example, when fit about a baby's buttocks regions, it is important that the diaper components substantially freely extend upon movements such as sitting, bending, or twisting.

Thus, it appears that a loading of 10 g/cm is generally applied to a diaper as it is worn.

Nakahata discloses that the topsheet is preferably compliant, soft feeling and non-irritating to the wearer's skin. See col. 5, lines 39-40. Nakahata further discloses that the topsheet has an elastic extensibility of from about 10% to about 500% in the cross machine direction when subjected to tensile forces as the diaper is worn. See Abstract, col. 10, lines 17-53, col. 13, lines 7-21, and claim 8. Since the record before us establishes that the load generally applied to a diaper as it is worn is 10 g/cm, it is reasonable to conclude that the topsheet in Nakahata exhibits the disclosed extensibility at a loading of about 10 g/cm.<sup>3</sup> Again, we note that the appellants are in the best position to rebut this finding. See Piasecki, 745 F.2d at 1472, 223 USPQ at 788 (after a prima facie

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<sup>3</sup> The examiner further notes that the nonwoven web in Nahakata and the appellants' nonwoven web are both made of synthetic fibers such as polypropylene (Nakahata, col. 5, lines 45-47; Appellants' Specification at 8, line 20). Answer at 10. Cf. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977) (where the claimed and prior art products are identical or substantially identical, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product).

case of unpatentability has been established, the burden of going forward shifts to the applicant).

Third, the appellants argue that impermissible hindsight was used to combine the teachings of Nakahata and Curro. Specifically, the appellants argue that Curro discloses that the elastomeric web, not the nonwoven web, has apertures having an aspect ratio within the claimed range. Brief at 5.

Regardless of whether the apertures are in the elastomeric web or in the nonwoven web, Curro expressly discloses that apertures having an aspect ratio greater than one retain more open area when the web is extended than apertures having an aspect ratio of one or less than one. See col. 11, lines 11-17. One of ordinary skill in the art would have recognized that more open area results in less impeded fluid flow and better breathability. Therefore, we agree with the examiner that one of ordinary skill in the art would have been motivated to modify the slits in the topsheet of Nakahata with slits having an aspect ratio greater than one as disclosed in Curro. Answer at 10-11.

Finally, the appellants argue that replacing the slits in Nakahata with the holes in Curro would render Nakahata unsatisfactory for its intended purpose. Brief at 6. We disagree. The examiner is not suggesting that the slits of Nakahata be replaced with Curro's three-dimensional apertures. Rather, the examiner is modifying the slits in Nakahata with an aspect ratio as disclosed in Curro. See Answer at 11. Significantly, the appellants have not provided any evidence to establish that the topsheet in Nakahata

would not work for its intended purpose with slits having an aspect ratio as disclosed in Curro. See In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965) (arguments in the brief do not take the place of evidence in the record). We note that a slit having an aspect ratio of 4:1 or 5:1 on the small scale disclosed in Nakahata, e.g., openings having an area as small as 2.0 mm<sup>2</sup>, would be expected to be substantially closed in the untensioned state.

For the reasons set forth above, the rejection of claim 1 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata and Curro is affirmed. The appellants argue claims 1, 4 and 6 as a group. Therefore, the rejection of claims 4 and 6 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata and Curro is also affirmed. See 37 CFR § 41.67(c)(1)(vii).

B. Rejection of claims 7-10

Claims 7-10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata and Shimalla. The examiner sets forth the prima facie case of obviousness on pages 5 through 6 of the Examiner's Answer.

1. Claim 7

As explained above, Nakahata discloses a topsheet which is capable of at least 70% extension in the cross machine direction at a loading of 10 g/cm. See section "A.," *supra*. However, the examiner points out that Nakahata does not disclose that the apertures in the topsheet are coincident with a plurality of weakened, melt-stabilized



locations and a portion of the circumferential edge of the apertures is defined by a remnant of the melt-stabilized locations as required by claim 7. Nevertheless, the examiner relies on Shimalla as teaching a nonwoven web comprising a plurality of apertures each with a circumferential edge, a portion of the circumferential edge being defined by a melt-stabilized location (col. 2, line 37-col. 3, line 30). The examiner further points out that the nonwoven web in Shimalla has increased tensile strength (col. 2, lines 37-53). Answer at 5.

The examiner concludes (Answer at 6):

It would have been . . . obvious to one of ordinary skill in the art at the time of the invention to use the material and melt-stabilized holes of Shimalla as the material and holes of Nakahata in order to increase tensile strength of Shimalla [sic, Nakahata]. One of ordinary skill in the art would have been motivated to use melt-stabilized holes because it increases the tensile strength of the web (*Shimalla col. 2, lines 37-53*). It is desirable to have increased tensile strength around the apertures because it will help prevent tearing when the web is stretched.

The appellants argue that combining Nakahata with Shimalla would render Nakahata unsatisfactory for its intended purpose. Specifically, the appellants argue that the fixed apertures of Shimalla destroy the benefit of the slits in Nakahata which open upon the application of a force and close upon the removal of the force. Brief at 7.

We disagree. The examiner is not suggesting that the slits/apertures of Nakahata be replaced with the fixed apertures of Shimalla. Rather, the examiner is modifying the apertures of Nakahata with melt-stabilized locations as in Shimalla to increase the tensile strength of the web when it is extended (see Figure 4). Answer at 11-12. See In re Keller,

642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981) (the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art).

The appellants further argue that Nakahata does not teach or suggest a nonwoven web that is capable of at least 70% extension in the cross machine direction at a loading of 10 g/cm. Brief at 7-8. We disagree for the reasons set forth above in Section "A."

For the reasons set forth above, the rejection of claim 7 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata and Shimalla is affirmed.<sup>4</sup> The appellants argue claims 7, 9 and 10 as a group. Therefore, the rejection of claims 9 and 10 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata and Shimalla is also affirmed. See 37 CFR § 41.67(c)(1)(vii).

2. Claim 8

Claim 8 is dependent on claim 7 and adds the limitation that the nonwoven web "comprises an open area greater than 15% and an average aperture size greater than 2.0mm<sup>2</sup>."

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<sup>4</sup> We note that Benson also discloses an extensible, apertured nonwoven web. The web is apertured by (1) weakening the web at a plurality of locations to create a plurality of weakened, melt-stabilized locations and (2) applying a tensioning force to the web to cause the nonwoven web to rupture at the plurality of weakened, melt-stabilized locations creating a plurality of apertures in the nonwoven web coincident with the weakened, melt-stabilized locations. See col. 2, lines 47-59; see also col. 9, lines 24-35. Upon application of a biasing force, the web is at least about 50 percent elongatable. See col. 2, lines 36-39.

Again, relying on Hockerson-Halberstadt, 222 F.3d at 956, 55 USPQ2d at 1491, the appellants argue that it was error for the examiner to rely on Figure 4 of Nakahata as showing a web having an open area greater than 15% where the specification is silent on the issue. Brief at 8-9. We disagree for the reasons set forth above in Section "A." Therefore, the rejection of claim 8 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata and Shimalla is affirmed.

C. Rejection of claims 1-4 and 6

Claims 1-4 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata, Shimalla and Curro. The prima facie case of obviousness is set forth on pages 6 through 7 of the Examiner's Answer.

First, the appellants argue that the proposed combination of references fails to teach or suggest the limitation of a web capable of at least 70% extension in the cross machine direction at a loading of 10 g/cm. The appellants also argue that the proposed combination fails to teach or suggest the limitation of a nonwoven web having an open area greater than 15%. Brief at 9-10.

We disagree. For the reasons set forth above in Section "A.," Nakahata suggests both of these limitations.

Second, the appellants argue that the examiner has merely selected the aspect ratio from Curro for insertion into Nakahata without appreciating the distinctions between

the two references. Brief at 10. Again, we disagree for the reasons set forth above in Section "A."

Finally, with reference to the combination of Nakahata and Shimalla, the appellants argue that replacing the apertures of Nakahata with the melt-stabilized holes of Shimalla renders Nakahata unsatisfactory for its intended purpose. Brief at 10-11. Significantly, none of claims 1 through 4 and 6 recite the limitation of melt-stabilized apertures (see claim 7).

For the reasons set forth above, the rejection of claim 1 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata, Shimalla and Curro is affirmed. The appellants argue claims 1-4 and 6 as a group. Therefore, the rejection of claims 2-4 and 6 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata, Shimalla and Curro is also affirmed. See 37 CFR § 41.67(c)(1)(vii).

D. Rejection of claim 5

Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata, Curro and Benson. The prima facie case of obviousness is set forth on page 8 of the Examiner's Answer.

The appellants indicate that claim 5, which is ultimately dependent upon claim 1, stands or falls with the patentability of claim 1. Brief at 11. The rejection of claims 1, 4 and 6 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nakahata and Curro has been affirmed. See Section "A.," supra. Therefore, the rejection of claim 5

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

  
PETER F. KRATZ  
Administrative Patent Judge

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